

REMARKS

The Examiner rejected claims 2-5, 10, 17, 32, and 33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671).

The Examiner rejected claims 6-9, 12-13, and 34-37 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671), and in further view of Frater (6,355,360).

The Examiner rejected claim 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671), and further in view of Block (4,269,549).

Applicants respectfully traverse the §103(a) rejections with the following arguments.

35 U.S.C. §103(a): Claims 2-5, 10, 17, 32, and 33

The Examiner rejected claims 2-5, 10, 17, 32, and 33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671).

Applicants respectfully contend that claim 4 is not unpatentable over Hatch in view of Weinreich, because Hatch in view of Weinreich does not teach or suggest each and every feature of claim 4.

An example of why claims 4 and 17 are not unpatentable over Hatch in view of Weinreich is that Hatch in view of Weinreich does not teach or suggest features relating to “a removable adhesive”, namely:

“a stack of two or more sheets, wherein successive sheets in each pair of successive sheets of the stack are coupled to each other by a **removable adhesive**, and wherein the **removable adhesive** is also disposed on top and bottom surfaces of the stack; a first surface of a first layer coupled with **the removable adhesive** to a first surface of the stack; and a first surface of a second layer coupled with **the removable adhesive** to a second surface of the stack” (emphasis added) (claim 1); and

“a plurality of stacks, wherein each stack and its adjacent stack of the plurality of stacks are both coupled with a **removable adhesive** to an intermediate layer therebetween, ..., wherein each stack comprises a plurality of sheets such that each sheet and its adjacent sheet of the plurality of sheets are coupled to each other with **the removable adhesive**” (emphasis added) (claim 17).

The Examiner argues: "Hatch et al. disclose a structure comprising a stack comprising a plurality of sheets such that each successive sheet is coupled with a removable adhesive between each sheet, and an opening extends through the plurality of sheets within the stack. The sheets may be selected from copper (Col. 4, lines 31-46). The removable adhesive is in the form of a lubricant which is a water soluble polymer and/or water solution (Col. 5, lines 30-45)."

In response to the preceding argument by the Examiner, Applicants respectfully contend that Hatch does not teach or suggest that the Hatch's dry film lubricant effectuates the aforementioned adhesive couplings (i.e., between sheets of a stack, between stack and first/second/intermediate layer, etc.).

In "Response to Arguments", the Examiner argues: "Hatch et al. teach a wax-based material (Col. 5, lines 40-48), which in itself is implicitly adhesive, that exhibits adhesive characteristics since it is adherable to substrates in dry, hardened form (Col. 3, lines 55-62)."

In response, Applicants acknowledge that Hatch, col. 3, lines 55-62 teaches that the lubricant in a dry film form adheres to a carrier sheet within a pre-fabricated lubricating sheet (i.e., the pre-fabricated lubricating sheet 30 consists of the dry film lubricant 32 adhering to both sides of the carrier sheet 31 in FIG. 2).

However, Hatch does not disclose anywhere that the dry film lubricant 31 adhesively couples the circuit board panels of the stack as required by claims 4 and 17. In addition, Hatch does not disclose anywhere that the dry film lubricant 31 adhesively couples the first and second layers to the first and second surfaces of the stack, respectively, as required by claim 4. Moreover, Hatch does not disclose anywhere that the dry film lubricant 31 adhesively couples each intermediate layer to its adjacent stacks, as required by claim 17.

In fact, Hatch, col. 3, lines 36-38 specifically recites: "The process of this invention includes the steps of placing a water soluble dry film lubricant adjacent the panel ..." (emphasis added). In other words, Hatch teaches "placing" the water soluble dry film lubricant adjacent the panel, rather than "adhering" the water soluble dry film lubricant to the panel.

In summary, the Examiner's allegation that the dry film lubricant effectuates the aforementioned adhesive couplings between the circuit board panels, and between the circuit board panels stack and the first/second/intermediate layer, is based on speculation and is not disclosed anywhere in Hatch.

Based on the preceding arguments, Applicants respectfully maintain that claims 4 and 17 are not unpatentable over Hatch in view of Weinreich, and that claims 4 and 17 are in condition for allowance. Since claims 2-3, 5, 10, 32, and 33 depend from claim 4, Applicants contend that claims 2-3, 5, 10, 32, and 33 are likewise in condition for allowance.

In addition with respect to claim 5, Applicants respectfully contend that Hatch in view of Weinreich does not teach or suggest the particular features: "a first surface of a first foil contacting a second surface of the first layer; and a first surface of a second foil contacting a second surface of the second layer" in conjunction with "the first and second layers are adapted to prevent burr formation in a hole subsequently drilled through the stack".

The Examiner argues: "Hatch et al. further teach the use of entry and exit materials positioned on opposing sides of the stack of sheets (Fig. 3, #s 34 and 36). The entry and exit material for the sheets is typically some type of paper base or thin metal sheet such as aluminum (Col. 6, lines 54-56). Although Hatch et al. teach the use of an entry and exit material layer,

Hatch et al. fail to teach the use of a burr preventing layer/ foil layer combination as claimed by the Applicant.... Weinreich, however, teach the use of a multilayered entry/exit board comprising a paper board laminate impregnated with a lubricant and aluminum foil layer combination (see Fig. 1). The multilayered entry/exit board is taught by Weinreich for the purpose of resisting burr formation during drilling (Col. 2, lines 21-46). It would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have combined the teachings of Hatch et al. and Weinreich since each of the aforementioned references are analogous insofar as being directed at entry/exit substrates for improving the drilling of stacked metal substrates.... Therefore, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have modified Hatch et al. to include a multilayered entry/exit board as taught by Weinreich in order to resist burr-formation during drilling."

Applicants respectfully contend that the preceding argument by the Examiner is not persuasive, because the entry board disclosed by Weinreich as resisting burr formation is not a foil. A foil is "a very thin sheet or leaf of metal" (see Webster's New World Dictionary 523 3d ed. 1988). The entry board disclosed by Weinreich as resisting burr formation comprises a non-metallic sheet and is therefore not a foil, as recited in Weinreich, col. 2, lines 21-27 ("According to another aspect of the invention, therefore, an entry board for use adjacent a printed circuit board (PCB) during drilling therethrough comprises a PCB-engaging sheet adapted to resist burr-formation during drilling, characterised in that it is laminated with a non-metallic sheet over whose surface is distributed a drill lubricant " (emphasis added). See also Weinreich, claim 1.

In "Response to Arguments", the Examiner argues: "Weinreich explicitly teaches a multilayered entry board material, at least one layer being formed of a foil material (Col. 1, lines

45-68). Weinreich further teaches specific embodiments wherein the foil layer is aluminum (Col. 3, lines 15-42). Therefore, the examiner maintains that Weinreich fairly suggests the use of a foil layer as claimed by the applicant."

In response, Applicants respectfully contend that the only embodiment disclosed by Weinreich as resisting burr formation is the embodiment using "a non-metallic sheet over whose surface is distributed a drill lubricant" as described in Weinreich, col. 2, lines 21-49. Weinreich does not disclose resisting burr formation as characterizing any other embodiment of Weinreich's invention. Therefore, Weinreich does not teach or suggest the aforementioned particular features of claim 5.

In addition, Applicants respectfully contend that the Examiner's argument for modifying Hatch by the alleged teaching of Weinreich in relation to claim 5 is not persuasive. The Examiner argues: "With regards to further motivation in replacing the burr formation board of Hatch et al. with the board detailed by Weinreich, Weinreich's board provides a comparative advantage insofar as being reusable (Col. 3, lines 1-12) and improves upon the operational characteristics of the substrate (Col. 1, lines 45-52)."

In response, Applicants contend that Weinreich, col. 3, lines 1-5 state that the alleged reusability of the substrate is due to the ability to remove a metal layer from the substrate, and is therefore not due to the addition of a foil layer to Hatch's substrate. In fact, Applicants maintain that Hatch is in no better position to achieve the alleged reusability of the substrate if the foil is added than if the foil is not added. Therefore, the Examiner's argument is not persuasive.

In further response, Applicants contend that Weinreich, col. 1, lines 45-51 state that there is an advantage due to having "adjacent faces of two laminar components of the entry board are

joined such that there is no relative slip during transportation, cutting and positioning, and such that they are separable by peeling them apart after use." Again, Applicants maintain that Hatch is in no better position to achieve the preceding advantages if the foil is added than if the foil is not added. Therefore, the Examiner's argument is not persuasive.

Based on the preceding arguments, Applicants respectfully maintain that claim 5 is not unpatentable over Hatch in view of Weinreich, and that claim 5 is in condition for allowance.

35 U.S.C. §103(a): Claims 6-9, 12-13, and 34-37

The Examiner rejected claims 6-9, 12-13, and 34-37 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671), and in further view of Frater (6,355,360).

Since claims 6-9, 12-13, and 34-37 depend from claim 4, which Applicants have argued *supra* to not be unpatentable over Hatch in view of Weinreich under 35 U.S.C. §103(a), Applicants maintain that claims 6-9, 12-13, and 34-37 are likewise not unpatentable over Hatch in view of Weinreich and further in view of Frater under 35 U.S.C. §103(a).

35 U.S.C. §103(a): Claim 11

The Examiner rejected claim 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hatch et al. (4,929,370) in view of Weinreich (5,435,671), and further in view of Block (4,269,549).

Since claim 11 depends from claim 4, which Applicants have argued *supra* to not be unpatentable over Hatch in view of Weinreich under 35 U.S.C. §103(a), Applicants maintain that claim 11 is likewise not unpatentable over Hatch in view of Weinreich and further in view of Block under 35 U.S.C. §103(a).

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0457.

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